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PATENT APPLICATION
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IN THE UNITED STATES PATENT & TRADEMARK OFFICE

ART UNIT: 2155

EXAMINER: Philip Tran (Hosain Alam SPE)


APPLICANT: Sanchaita Datta and Ragula Bhaskar

SERIAL NO.: 10/034,190

FILED: December 28, 2001

FOR: DOMAIN NAME RESOLUTION MAKING
IP ADDRESS SELECTIONS IN RESPONSE
TO CONNECTION STATUS WHEN
MULTIPLE CONNECTIONS ARE
PRESENT

APPEAL BRIEF

CERTIFICATE OF MAILING
DATE OF MAILING: <u>7/29/2004</u>
I hereby certify that this paper or fee (along with any paper or fee referred to as being attached or enclosed) is being mailed, postage paid, in a package addressed to Mail Stop Appeal Brief, Patents, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on the date indicated above.
 Printed Name <u>Sheila Halterman</u>

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Commissioner:

Applicants and Assignee hereby appeal from the Final Office Action mailed May 21, 2004. The Notice of Appeal is filed concurrently. This application has been granted **accelerated** examination status.

Change of Customer Number and Address

Please note that this application should now be associated with Customer Number 20,551, at the address for that Customer Number. The undersigned is already an attorney of record in this case; he has simply changed firms.

Third Party Submission

The Final Office Action acknowledges the presence of a third-party submission but makes it unclear whether the Examiner has file copies of the references cited in that submission. If the Examiner lacks copies, copies will be submitted for the file; otherwise, the undersigned will assume that the Examiner does have copies of the third-party submission references. The undersigned respectfully submits that this approach is consistent with evolving Office practice, e.g., with the Office's laudable effort to reduce unnecessary paperwork by discontinuing the practice of sending paper copies of U.S. Patents cited as references.

Real Party in Interest

The real party in interest in this appeal is Assignee, Ragula Systems (FatPipe Networks).

Related Appeals and Interferences

None.

Status of Claims

Claims 1-17 were rejected in the Final Office Action, are still pending, and are now appealed.

Status of Amendments

No amendments were filed after the Final Office Action.

Summary of Invention

Consistent with the application's title, the present invention relates to "domain name resolution", namely, the translation of domain names to IP addresses in a computer network. The invention relates more particularly to tools and techniques for distributing domain name resolution results among multiple connections. This can provide benefits such as dynamic load-balancing across network connections and/or greater reliability.

One embodiment provides a connection-sensitive domain name resolution device 112 that comprises a data component 114 identifying IP addresses for at least two paths to a server which has a domain name. Figure 2, for instance, shows multiple paths between a server 104 and the Internet 106. One connection path goes over a first router (“router A”) 108 and network links 110, while another path goes over another router (“router B”) 108 and other links 110. The device 112 also comprises a code component 116 which receives 702 a domain name resolution request specifying the domain name, selects 704 an IP address from the data component based on information about the status of a path to the server, and supplies 706 the selected IP address in response to the domain name resolution request. In particular embodiments and/or situations, the IP addresses may identify routers, firewalls, bridges, and/or other path components. The information about path status may include device status, link status, link bandwidth, latency, and/or other path statistics or characteristics.

Thus, in a particular situation a particular connection-sensitive domain name resolution device may, for instance, avoid selecting the IP address of a router that is on a path to the server but is not available. It may select the IP address in a round-robin manner by selecting the next IP address in a list of IP addresses of routers that are on paths to the server and are available when the selection is made. It may select the IP address of an under-loaded path, thereby tending to balance the loads on the paths to the server. The connection-sensitive domain name resolution device may be placed between the server and a router for the server, as shown in the examples of Figures 1-5, or not, as in the example of Figure 6. In different configurations, the device 112 may have multiple connections to the server or to the Internet, or it may not; it may assist dynamic load-balancing over server paths and also perform load-balancing over multiple servers, or not. The invention also provides methods for distributing domain name resolution results over multiple paths.

Issues

1. Is U.S. Patent Application Publication No. US 2002/0038339 (“Xu Non-provisional”), which is cited by the Final Office Action, actually prior art?

2. Are the teachings in the earlier-filed U.S. Provisional Application No. 60/231230 (“Xu Provisional”) actually “the same” as the teachings in Xu Non-provisional?
3. Was a *prima facie* case made for the rejection of claims 1-17 by citing specific teachings only from Xu Non-provisional when those teachings are missing from the earlier-filed Xu Provisional?

Grouping of Claims

Solely for purposes of this appeal, the claims are grouped as follows:

Group I: claims 1-17 (all pending claims)

In this appeal, all claims thus stand or fall together.

Argument

By way of context, the following papers are among those filed or mailed in this case:

Provisional I	provisional application, filed December 29, 2000
Provisional II	provisional application, filed March 6, 2001
Provisional III	provisional application, filed December 10, 2001
Application	non-provisional application, filed December 28, 2001
IDS	information disclosure statement, filed April 29, 2002
Petition	petition to accelerate examination, filed April 21, 2003
Petition Grant	decision granting Petition, mailed June 2, 2003
First Action	first office action on the merits, mailed August 22, 2003
Response	response, filed February 20, 2004
Third-Party	third party submission, filed on or about April 5, 2004
Final Action	final office action, mailed May 21, 2004

The shortcomings of the rejections will now be reviewed. Arguments and statements by Applicants made earlier but not repeated here are also part of the record for this appeal and are not waived, although they may be modified or supplemented here. To keep this brief short while still trying to provide an adequate basis for review, some observations and arguments that might

have been presented are not included. Accordingly, Applicants' silence here with respect to particular statements by the Office does not indicate their agreement or acquiescence.

Xu Non-provisional is not prior art

The First Action cited Xu Non-provisional as prior art. A Response has been submitted that support for the independent claims, at least, is found in Provisional II (a.k.a. '598 Provisional in the Response). The Final Action does not dispute this. The Response further noted that the Application claims priority to Provisional II. The Final Action did not dispute the priority claim. The Response further noted that Provisional II predates Xu Non-provisional. This is also undisputed. Accordingly, the Response concluded that no *prima facie* case for rejection had been made, because the rejections relied on Xu Non-provisional. Xu Non-provisional is not prior art. Xu Non-provisional was filed August 16, 2001, after Provisional II was filed on March 6, 2001. *See, e.g.*, 35 U.S.C. § 102(e) (reference must be a published application by another "filed in the United States before the invention by the applicant") (emphasis added).

Xu Provisional fails to teach the same things as Xu Non-provisional

The Final Action cites Xu Non-provisional while relying on the earlier filing date of Xu Provisional. This might have been a harmless error if the two references actually taught the same things. But they do not. The disclosure in Xu Provisional is much shorter and less detailed than in Xu Non-provisional. Key "prior art" teachings relied upon by the rejections are not present in the earlier Xu Provisional.

Consider domain name resolution, for instance, which may be performed by a domain name system ("DNS") that resolves domain names. Each of the pending independent claims has limiting language directed to domain name resolution. Xu Non-provisional Figures 17 through 17J each contain an item labeled "DNS RESOLUTION" and the corresponding text in that reference (e.g., paragraphs 0187-0196) discusses domain name resolution. But none of the figures in the earlier-filed Xu Provisional recite "DNS" or "domain name". The only apparent mention of domain names in the text of Xu Provisional is brief glossary entries on page 16, which fails to discuss resolution of domain names. The Final Action is simply wrong when it

states the following on page 8: “Though labels on the drawings in the Xu provisional application are different, the teachings still remain the same.” The teachings as to domain name resolution, at least, are not the same. Although Xu Provisional does teach something about load-balancing, load-balancing is not the present invention. It is merely one aspect of some – not even all – embodiments. The present invention involves determining how candidate DNS server paths are operating and sending domain name resolution requests over paths whose status is acceptable. Xu Provisional fails to teach anything significant about domain name resolution, much less to teach monitoring paths and selecting between them according to their status when sending domain name resolution requests.

No *prima facie* rejection was made

With two minor exceptions, the Final Action cites specific teachings only from Xu Non-provisional. But Xu Non-provisional is not prior art, so it cannot be the basis of a *prima facie* case for rejection of any claim.

One exception to the Final Action’s reliance on Xu Non-provisional is the citation to Xu Provisional pages 6-14 on page 8 of the Final Action. As noted above, however, that citation is to load-balancing teachings, not to any teaching about domain name resolution tools and techniques as claimed by Applicants.

The other exception is to alleged teachings of U.S. Patent No. 6262987 (“Mogul”), made on page 7 of the Final Action. As noted on page 4 of the Response previously filed by Applicants, however, the Office has failed to provide specific evidence of a teaching or suggestion in the prior art that would have led on of ordinary skill in the art at the time to combine Mogul with Xu Non-provisional. *See, e.g., C.R. Bard, Inc. v. M3 Sys., Inc.*, 157 F.3d 1340, 1352, 48 USPQ2d 1225, 1232 (Fed. Cir. 1998) (describing “teaching or suggestion or motivation [to combine]” as an “essential evidentiary component of an obviousness holding”); *In re Rouffet*, 149 F.3d 1350, 1359, 47 USPQ2d 1453, 1459 (Fed. Cir. 1998) (“the Board must identify specifically . . . the reasons one of ordinary skill in the art would have been motivated to select the references and combine them”); *In re Fritch*, 972 F.2d 1260, 1265, 23 USPQ2d 1780, 1783 (Fed. Cir. 1992) (examiner can satisfy burden of obviousness in light of combination “only

by showing some objective teaching [leading to the combination]”); In re Fine, 837 F.2d 1071, 1075, 5 USPQ2d 1596, 1600 (Fed. Cir. 1988) (evidence of teaching or suggestion “essential” to avoid hindsight). Moreover, even if the combination were proper, it is not a combination of **prior art** references because Xu Non-provisional is dated too late to be prior art.

In short, no *prima facie* case was made because the rejections rely on Xu Non-provisional, which is not prior art.

Conclusion

The Final Action rejections cannot be sustained. They rely on Xu Non-provisional which is not prior art, on misstatements as to the content of Xu Provisional, and on an improper combination of references. The undersigned also notes here that a statement made on page 9 of the Final Action is clearly erroneous; it is not correct to reject dependent claims “at least by virtue of their dependency on independent claims”. Even if an independent claim were properly rejected (which did not occur in this case), art that teaches an independent claim does not automatically teach narrower dependent claims.

All rejections should be withdrawn or reversed. If any questions might be answered by telephone, the undersigned invites a call at the Office’s convenience.

The Commissioner is hereby authorized to charge any additional fee or to credit any overpayment in connection with this Appeal Notice and Brief to Deposit Account No. 20-0100.

Dated this July 29, 2004.

Respectfully submitted,



JOHN W.L. OGILVIE
Registration No. 37,987

THORPE NORTH & WESTERN, LLP
Customer No. 20,551
P.O. Box 1219
Sandy, Utah 84091-1219
801-566-6633 (voice)
801-566-0750 (fax)

CLAIMS ON APPEAL

1. A connection-sensitive domain name resolution device, comprising:
a data component identifying IP addresses for at least two paths to a server which has a domain name; and
a code component which receives a domain name resolution request specifying the domain name, selects an IP address from the data component based on information about the status of a path to the server, and supplies the selected IP address in response to the domain name resolution request.
2. The connection-sensitive domain name resolution device of claim 1, wherein IP addresses in the data component identify routers on paths to the server, and the code component avoids selecting the IP address of a router that is on a path to the server but is not available.
3. The connection-sensitive domain name resolution device of claim 1, wherein IP addresses in the data component identify routers on paths to the server, and the code component selects the IP address in a round-robin manner by selecting the next IP address in a list of IP addresses of routers that are on paths to the server and are available when the selection is made.
4. The connection-sensitive domain name resolution device of claim 1, wherein the code component selects the IP address of an under-loaded path, thereby tending to balance the loads on the paths to the server.
5. The connection-sensitive domain name resolution device of claim 1, wherein the device is placed between the server and a router for the server.
6. The connection-sensitive domain name resolution device of claim 1, in combination with a router for the server, the router having multiple connections to the Internet.

7. The connection-sensitive domain name resolution device of claim 1, in combination with a server-sensitive domain name resolver, wherein the combination performs load-balancing over server paths and also performs load-balancing over multiple servers.

8. A method for distributing domain name resolution results over multiple paths, the method comprising the steps of:

receiving a domain name resolution request which requests an IP address corresponding to a specified domain name;

determining that at least one candidate connection component is operating reliably and thus is a reliable connection component, the reliable connection component being in a path to a server having the domain name, the reliable connection component having an IP address; and

supplying the IP address of the reliable connection component in a response to the resolution request, thereby directing traffic to the server over a path through the reliable connection component.

9. The method of claim 8, further comprising the steps of determining the load on at least one candidate connection component and selecting a connection component which is not over-loaded, the selected connection component having an IP address and being in a path to the server having the domain name, wherein the supplying step comprises sending the IP address of the selected connection component in a response to the resolution request, thereby directing traffic to the server over a path through the connection component that is both reliable and not over-loaded.

10. The method of claim 8, further comprising the step of adjusting the time-to-live to be associated with a DNS record for an IP address in a path to the server.

11. The method of claim 8, further comprising the step of pinging a router on a path to the server to determine if the router is a reliable connection component.

12. The method of claim 8, further comprising the step of performing a router status inquiry to determine the router's load.

13. A computer-readable storage medium having a configuration that will cause performance of a method for connection-sensitive domain name resolution when multiple connections to a web server are potentially available, the method comprising:

receiving a DNS resolution request;

selecting an IP address based on connection component status; and

supplying the selected IP address in response to the request.

14. The configured medium of claim 13, wherein the selecting step comprises determining whether a connection responds to pings.

15. The configured medium of claim 13, wherein the selecting step comprises selecting an IP address of the next available path in a round-robin manner.

16. The configured medium of claim 13, wherein the selecting step comprises determining whether a router is under-loaded.

17. The configured medium of claim 13, further comprising the step of setting a DNS record time-to-live.